

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS & BODY



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION CO

COOLING SYSTEM

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COOLING SYSTEM

COOLING SYSTEM

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DESCRIPTION

The cooling system is of the conventional pressure type. A centrifugal pump built in the front cover serves to circulate the coolant.

The pressure type radiator filler cap installed on the radiator controls the cooling system at higher than atmospheric pressure. The higher pressure rises the boiling point of the coolant

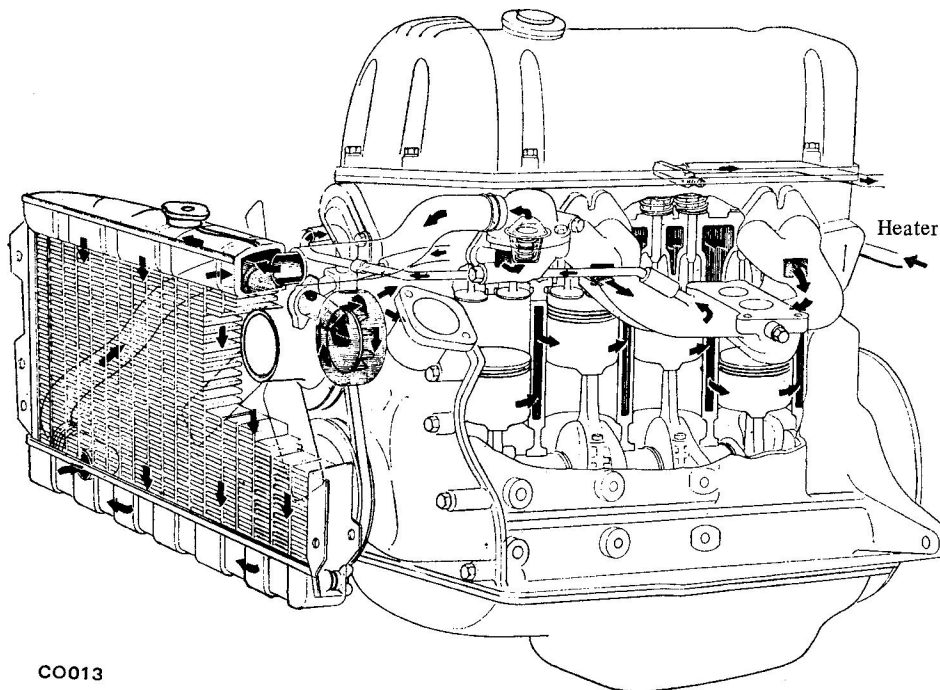
and increases the cooling efficiency of the radiator.

When the thermostat is closed, the coolant remains in the cylinder head and block for quick warming up of the engine. After reached normal operating temperature, the coolant circulates through the radiator.

CAUTION:

To avoid serious personal injury, never remove radiator cap quickly when the engine is hot. Sudden release of cooling system pressure is very dangerous.

If it is necessary to remove the radiator cap when the radiator is hot, turn the cap slowly counterclockwise to first stop. After all pressure in cooling system is released, then turn the cap past the stop and remove it.



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Fig. CO-1 Cooling system

Coolant level

The radiator coolant level should be checked and maintained 30 mm (1.18 in) for 510, 610 models, and 15 to 25 mm (0.6 to 1.0 in) for 620 model

below the bottom of the filler neck when the engine is cold. The expansion and contraction of the coolant will cause the level to drop by overflow.

Draining and flushing the cooling system

To drain the cooling system remove the radiator cap, release the drain cock at the bottom of the radiator and a drain plug on the right side of the cylinder block. If the heater system is installed, set the heater temperature control valve at open position.

After the coolant is drained completely, close the drain cock and plug and refill the system with clean water.

WATER PUMP

The water pump is of a centrifugal type, which is mounted on the engine front cover. The fan and pulley are bolted at the pulley hub.

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The pump shaft is supported by a double row ball bearing press fit in an aluminum die cast pump body. The bearings are permanently lubricated and sealed to prevent loss of lubricant and entry of dirt.

The pump contains an impeller that turns on a steel shaft which rotates in the ball bearings, and the volute chamber is built in the front cover assembly. The inlet of the pump is connected to the radiator lower tank by a hose.

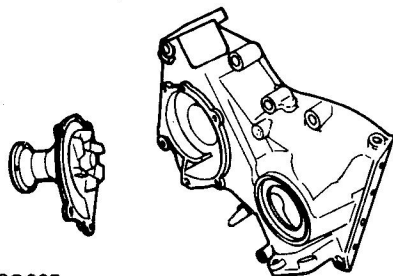


Fig. CO-2 Water pump and front cover

Removal

1. Drain coolant into a clean container.
2. Loosen four bolts retaining fan shroud to radiator and remove shroud.
3. Loosen belt, then remove fan blade and pulley from hub.
4. Remove five bolts, pump assembly, and gasket from front cover.

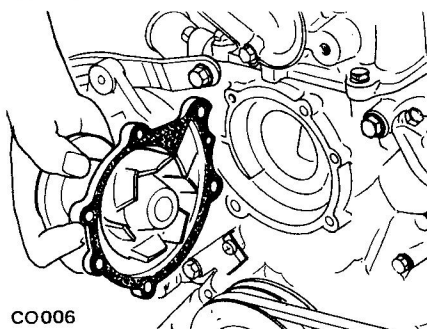


Fig. CO-3 Removing water pump

Disassembly

The water pump body is made of aluminum, and its bearing outer race is press fit. For this reason, the body, shaft bearing should not be disassembled.

Inspection

Inspect pump assembly for the following conditions, and replace it if necessary.

1. Badly rusted or corroded body assembly and vane.
2. Excessive end play or roughness of bearings in operation.

Installation

1. Make sure to clean the gasket surfaces on pump and front cover. Always use new gasket when installing pump assembly. Be sure to tighten bolts uniformly.
2. Fill cooling system and check for leaks at pump.
3. Install fan pulley and fan blade, and tighten fixing bolts securely. Install belt and adjust for proper tension.

Fan belt adjustment

The fan belt should be properly adjusted at all time. A tight belt serves wear of alternator and water pump bearings. A loose belt cause improper cooling fan, water pump and alternator operation.

Check the belt slack between alternator and fan pulley by pressing a force of 10 kg (22 lb).

Slackness of fan belt:

8 to 12 mm
(0.31 to 0.47 in)

If adjustment is necessary, loosen bolt retaining alternator adjusting bar to alternator. Move alternator toward or away from engine until the correct tension is obtained.

THERMOSTAT

A wax pellet type thermostat is mounted in the thermostat housing at the cylinder head water outlet adjacent to the inlet manifold. The function of thermostat is to control the flow of coolant, facilitating fast

engine warm up and regulating coolant temperature. The thermostats are designed to open and close at predetermined temperatures and if not operating properly should be removed and tested as listed below:

Removal and installation

1. Drain coolant partially.
2. Disconnect upper radiator hose at water outlet.
3. Loosen two securing nuts and remove water outlet, gasket, and thermostat from thermostat housing.
4. After checking thermostat satisfactorily, reinstall, replacing with a new housing gasket.
5. Reinstall water outlet and tighten securing nuts.
6. Replenish coolant and check for leaks.

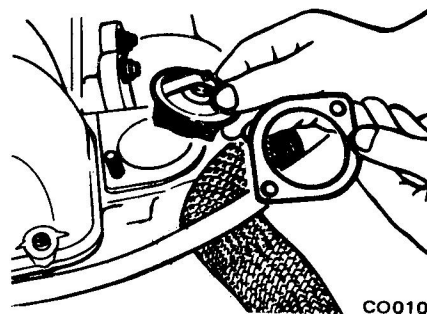


Fig. CO-4 Removing thermostat

Inspection

A sticking thermostat will prevent the cooling system from functioning properly. If the thermostat sticks in the open position, the engine will warm up very slowly. If thermostat sticks in the closed position, overheating will result. Therefore, the thermostat should be inspected so as to make sure that it is in good condition.

1. Submerge thermostat in hot water 5°C (9°F) above the temperature specified in the following table.
2. Measure the lift height of valve by inserting a screwdriver marked at

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the point about 8 mm (0.315 in) from its tip.

3. Remove thermostat and place in water 5°C (9°F) below temperature stamped on the frame.

4. Under the above condition, valve should be closed completely. In this case, agitate water thoroughly.

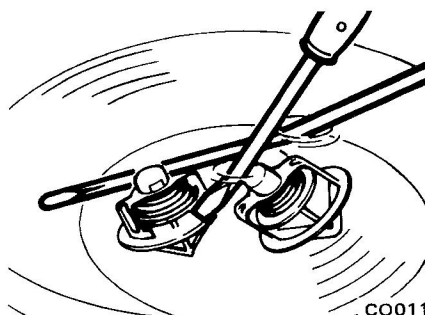


Fig. CO-5 Inspecting thermostat

If thermostat does not operate at the above specified temperatures, it must be replaced because it can not be repaired.

	U.S.A.	Canada	Puerto Rico, Guam and U.N.T.T.
Valve opening temp.	82°C (180°F)	88°C (190°F)	76.5°C (170°F)
Max. valve lift	Above 8 mm at 95°C (0.315 in at 203°F)	Above 8 mm at 100°C (0.315 in at 212°F)	Above 8 mm at 90°C (0.315 in at 194°F)

Note: It is necessary to check a new thermostat before installing it in the engine.

RADIATOR

The radiator is a conventional down flow type having the top and bottom tanks to distribute the coolant flow uniformly through the vertical tube of the radiator core.

The radiator filler cap is designed to maintain a pre-set pressure (0.9 kg/cm² 13 lb/sq in) above atmospheric pressure. The relief valve consisted of a blow-off valve and a vacuum valve, helps to prevent coolant loss from boiling for by raising the pressure on the coolant. On the contrary, as the pressure is reduced below atmospheric pressure the vacuum valve allows air to re-enter the radiator, preventing the formation of vacuum in the cooling system.

The bottom tank on cars equipped with the automatic transmission incorporates an oil cooler for the transmission fluid.

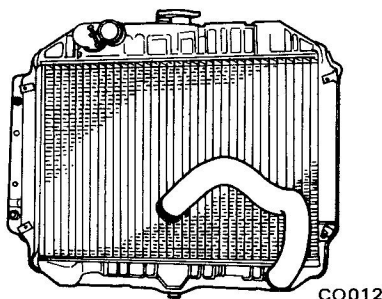


Fig. CO-6 Radiator for manual transmission

Removal and installation

1. Drain coolant into a clean container.
2. Remove front grille.
3. Disconnect radiator upper and lower hoses. On a vehicle with automatic transmission, disconnect cooler inlet and outlet lines from radiator.

4. Remove bolts retaining radiator from radiator side supports and remove radiator upwards.

5. Install radiator in reverse sequence of removal.

Inspection

Radiator cap should be checked for pressure at regular tune up intervals. First, check rubber seal on cap for tears, cracks or deterioration after cleaning it. Then, install radiator cap on a tester. If cap does not hold pressure or will not release at the proper pressure, replace cap.

Also, inspect radiator for water leakage using the cap tester under applying a pressure of 1.2 kg/cm² (17 lb/sq in). If such the defect is detected, repair or replace radiator.

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Thermostat

	U.S.A.	Canada	Puerto Rico, Guam and U.N.T.T.
Valve opening temp.	82°C (180°F)	88°C (190°F)	76.5°C (170°F)
Max. valve lift	Above 8 mm at 95°C (0.315 in at 203°F)	Above 8 mm at 100°C (0.315 in at 212°F)	Above 8 mm at 90°C (0.315 in at 194°F)

Radiator

Vehicle model	610		510		620	
Engine model	L18			L16		
Transmission type	Manual	Automatic	Manual	Automatic	Manual	Automatic
Dimension of radiator core						
height × width × thickness mm (in)	360 × 502 × 32 (14.2 × 19.8 × 1.26)	←	280 × 488 × 38 (11.0 × 19.2 × 1.50)	←	330 × 446 × 32 (13.0 × 17.6 × 1.26)	←
Type	Corrugated fin type	←	←	←	←	←
		Equipped with oil cooler		Equipped with oil cooler		Equipped with oil cooler
Radiator fin pitch mm (in)	2.5 (0.0984)	2.3 (0.0906)	2.5 (0.0984)	2.3 (0.0906)	2.5 (0.0984)	←
Cap working pressure kg/cm ² (lb/sq in)	0.9 (13)	←	←	←	←	←
Cooling system capacity						
Less heater	6.0 liters (1 5⁄8 U.S. gal.) (1 3⁄8 Imp. gal.)	←	6.4 liters (1 3⁄4 U.S. gal.) (1 1⁄8 Imp. gal.)	←	5.4 liters (1 3⁄8 U.S. gal.) (1 1⁄8 Imp. gal.)	←
With heater	6.5 liters (1 3⁄4 U.S. gal.) (1 3⁄8 Imp. gal.)	←	6.8 liters (1 3⁄4 U.S. gal.) (1 1⁄2 Imp. gal.)	←	6.0 liters (1 5⁄8 U.S. gal.) (1 3⁄8 Imp. gal.)	←

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TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Loss water	Coolant filled up radiator. Damaged radiator seams. Excessive wear in water pump. Leakes at heater connections or plugs. Leak at water temperature gauge. Loose joints. Defective cylinder head gasket. Cracked cylinder block. Cracked cylinder head. Loose cylinder head bolts.	Do not fill up coolant to top of filler neck while cold. Repair. Replace. Repair. Tighten. Tighten. Replace. Check engine oil for contamination and refill as necessary. Replace. Pull engine oil level gauge to check for water in crankcase. Replace. Tighten.
Poor circulation	Restriction in system. Insufficient coolant. Inoperative water pump. Loose fan belt. Inoperative thermostat.	Check hoses for crimps, reverse flush radiator, and clear the system of rust and sludge. Replenish. Replace. Adjust. Replace.
Corrosion	Excessive impurity in water. Infrequent flushing and draining of system.	Use soft, clean water. (rain water is satisfactory). Cooling system should be drained and flushed thoroughly at least twice a year. [Nissan long life coolant (L.L.C.) can be used throughout the seasons of a year, and exchange every two years or total running mileage of 40,000 km (24,000 miles)].
Over heating	Defective thermostat. Radiator fins choked with mud, chaff, etc. Incorrect ignition and valve timing. Dirty oil and sludge in engine. Inoperative water pump. Loose fan blet. Restricted radiator. Inaccurate temperature gauge. Impurity in water.	Replace. Clean out air passage thoroughly by using air pressure from engine side of radiator. Adjust. Refill. Replace. Adjust. Flush radiator. Replace. Use soft, clean water.

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Condition	Probable cause	Corrective action
Over cooling	Defective thermostat. Inaccurate temperature gauge.	Replace. Replace.